

**REMARKS**

***Overview***

In the Office Action under reply, the first Action on the merits, claims 1-60 are pending. Claims 23-28 were examined, claims 1-22 and 29-60 having been withdrawn as directed to non-elected subject matter. The claims have been rejections as follows:

- (1) claims 23-28 are rejected on the ground of non-statutory obviousness-type double patenting as unpatentable over claims 1-7 of U.S. Patent No. 6,720,007 ("the '007 patent");
- (2) claim 28 is rejected under 35 U.S.C. §112, second paragraph, as indefinite;
- (3) claims 23-28 are rejected under 35 U.S.C. §102(a) or 35 U.S.C. §102(e) as anticipated by Matyjaszewski et al., US 6,627,314 ("Matyjaszewski"); and
- (4) claim 26 is rejected under 35 U.S.C. §103(a) as unpatentable over Matyjaszewski;

In addition, the specification is objected to because of informalities.

The rejections and objections are overcome in part by the amendments made herein, and are otherwise traversed for at least the following reasons.

***Amendments to the specification***

The specification has been amended to identify the U.S. Patent number and filing date of U.S. Patent Application Serial No. 10/033,389. The priority claim to this document was properly set forth in applicant's Request for Filing a Continuation Utility Application under 37 C.F.R §1.53(b), as originally filed on April 12, 2004. No new matter is introduced by this amendment.

***Claim amendments***

Claim 28 has been amended to clarify the language of the claim, and now states that the polymer shell comprises a copolymer selected from the group consisting of styrene-PMMA, benzyl methacrylate-PMMA, styrene-PHEMA, styrene-PEMA, styrene-methacrylate, or styrene-butylacrylate. No new matter is added by this amendment.

***Obviousness-Type Double Patenting Rejection***

Claims 23-28 stand rejected under the judicially created doctrine of obviousness-type double patenting as unpatentable over claims 1-7 of U.S. Patent No. 6,720,007. Without

conceding the validity of the rejection, and in order to expedite prosecution, applicants are filing a Terminal Disclaimer over the abovementioned U.S. Patent. The Terminal Disclaimer meets all requirements of 37 C.F.R. §1.321(b), and, accordingly, applicants respectfully request withdrawal of the rejection.

**Rejection under 35 U.S.C. §112, second paragraph**

Claim 28 stands rejected under 35 U.S.C. §112, second paragraph, as indefinite, the Examiner citing uncertainty over the variety of alternative elements recited in the claim. Claim 28 has been amended to clarify the language of the claim. Accordingly, applicants respectfully request withdrawal of the rejection.

***Rejection under 35 U.S.C. §102(a) or 35 U.S.C. §102(e)***

Claims 23-28 stand rejected under 35 U.S.C. §102(a) or 35 U.S.C. §102(e) as anticipated by Matyjaszewski. The Examiner states that Matyjaszewski discloses a method of making a polymer-coated substrate composite microsphere (Action at page 4). This rejection is traversed.

Matyjaszewski is directed at the preparation of *nanocomposite* structures (see, for example, the title of Matyjaszewski). Accordingly, Matyjaszewski is directed entirely to the preparation of nanoscale materials. The silica particles cited by the Examiner in Example 1, Figures 1, 2, and descriptions thereof (Action at page 4) have diameters that are in the nanometer scale. The particles used as initiators and shown in Figure 2, for example, are described as 15-20 nm in diameter. The polymer composite particles shown in Figures 11-14 are clearly less than 100 nm in size. Furthermore, col. 7, lines 54-60 of Matyjaszewski states that “[d]uring the preparation of silica based particles with attached initiator groups, in order to avoid coagulation, a solvent switch technique is taught whereby one can prepare well separated, redispersible silica particles with particle sizes between 5 and 1000 nm, preferably particles having diameters between 10 and 50 nm, comprising functional initiator groups on the surface on the surface of the particles.” Matyjaszewski also states in col. 12, lines 6-9, that “[i]n the examples... substantially uniform particles with diameters between 15-20 nm and 1000 initiation sites on the surface were prepared.” Indeed, claim 26 in Matyjaszewski states that the initiator particle may

have a diameter between 5 and 200 nm. Clearly the disclosure of Matyjaszewski is meant to apply only to nanoscale initiator particles.

In addition to the initiator particles, the final product particles discussed in Matyjaszewski also have nanoscale diameters. The products reported in Tables 2 and 3 shown in columns 20-21 of Matyjaszewski have particle diameters in the range of about 30 nm to about 55 nm. The largest product particles reported in Table 4 (col. 23) are about 110 nm in diameter.

In contrast, instant claims 23-28 are directed to a method for preparing a polymer-coated substrate composite *microsphere*. The method comprises providing a substrate comprising a plurality of hydroxyl groups. Some examples of substrates that are suitable for the claimed method are described on page 4, lines 19-26 of the original specification, and include microspheres having a diameter in the range of 1-100  $\mu\text{m}$ . As a specific example, silica beads having a diameter of about 3  $\mu\text{m}$  are used in the Example set forth on page 14 of the original specification.

Applicants note that Matyjaszewski discusses initiator particles between 5 and 1000 nm (i.e., between 5 nm and 1  $\mu\text{m}$ , see col. 7, line 58). Matyjaszewski also describes Stober particles having diameters between the ranges 10-1000 nm (i.e., between 10 nm and 1  $\mu\text{m}$ , see col. 10, lines 43-47). According to MPEP 2131.03 (II),

“When the prior art discloses a range which touches or overlaps the claimed range, but no specific examples falling within the claimed range are disclosed, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with ‘sufficient specificity to constitute an anticipation under the statute.’”

The disclosure of Matyjaszewski does not provide “sufficient specificity” for the microsphere materials of the instant application, and therefore does not anticipate the pending claims. The examples provided in Matyjaszewski employ materials with diameters that are well below 1000 nm. For instance, initiator particle diameters of 20 nm (col. 19, line 29), 24 nm (cols. 20-21, Tables 2 and 3), and approximately 20 nm (col. 22, line 67 - col. 23, line 2), are described. Furthermore, as stated above, Matyjaszewski describes that 10-50 nm particles are preferred (col. 7, line 59). In addition, Matyjaszewski’s characterization of particle sizes *between* 5 nm and 1000 nm, or *between* 10 nm and 1000 nm, is vague, and may be interpreted to indicate that particles having a diameter of 1  $\mu\text{m}$  are not suitable for the methods discussed therein. In the

very least, this vagueness is further evidence that Matyjaszewski does not provide “sufficient specificity” to anticipate the pending claims.

Because Matyjaszewski does not disclose a method for preparing a polymer-coated substrate composite *microsphere*, the pending claims are not anticipated by Matyjaszewski. Applicants respectfully request withdrawal of the rejection.

***Rejection under 35 U.S.C. §103(a)***

Claim 26 stands rejected under 35 U.S.C. §103(a) as unpatentable over Matyjaszewski. The Examiner states that “[i]t is unclear if Maty actually performs cross-linking of the polymer shell,” and that “to the extent that the cross-linking is not disclosed in Maty, or was not performed in Maty, it would be *prima facie* obvious to a person of ordinary skill in the art at the time of the invention to cross-link the polymer shell.” This rejection is traversed.

The Examiner has failed to meet the requirements for a *prima facie* case of obviousness over the reference. The MPEP (§2142) lists three criteria, all of which must be met in order for there to be a *prima facie* case of obviousness:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

Matyjaszewski fails to teach or suggest all of the claim limitations. The failure of Matyjaszewski to teach a method for preparing a polymer-coated substrate composite *microsphere* is discussed above. Matyjaszewski’s recitation that “one can prepare well separated, redispersible silica particles with particle sizes *between* 5 and 1000 nm, preferably particles having diameters between 10 and 50 nm” (col. 7, lines 56-59, emphasis added) does not render the rejected claim obvious. The range recited in Matyjaszewski is not meant to include microscale particles, as a particle size of 1  $\mu\text{m}$  or larger is not *between* 5 and 1000 nm. Even if, *arguendo*, Matyjaszewski had intended the phrase “*between* 5 and 1000 nm” to include 1  $\mu\text{m}$ , the disclosure of Matyjaszewski clearly and repeatedly states that the invention is directed to *nanocomposite* structures (i.e., nanoscale composite structures). The title, abstract, drawings, specification, and

claims each state that the invention is directed towards nanocomposite particles. Accordingly, Matyjaszewski fails to teach or suggest all of the claim limitations.

Therefore, regardless of whether it would have been obvious to one of skill in the art to cross-link the polymer shell, Matyjaszewski fails to teach or suggest all of the claim limitations. Accordingly, the pending claims are not *prima facie* obvious over the disclosure of Matyjaszewski, and applicants respectfully request withdrawal of the rejection.

### CONCLUSION

Applicants submit that the claims of the application are in condition for allowance. Applicants respectfully request withdrawal of the rejections, and prompt issuance of a notice of allowance. If the Examiner has any questions concerning this communication, or would like to discuss the application, the art, or other pertinent matters, a telephone call to the undersigned would be welcomed.

Respectfully submitted,

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